



## Microgreens: Nutritious Mini-Greens for Health

\*Banu Priya M<sup>1</sup>, Dr. Sreelakshmi P<sup>2</sup>, Dr. Pooja Krishna J<sup>2</sup>, Dr. J.R Jerish<sup>2</sup>,  
Mrs. Feba Varghese<sup>2</sup>, Babiga Mano Lighty M<sup>1</sup> and S. Hariharan<sup>1</sup>

<sup>1</sup>M.Sc. Agronomy, Joy University, Tirunelveli – 627116 Tamil Nadu, India

<sup>2</sup>Asst. Professor, School of Agricultural Sciences, Joy University, Tirunelveli – 627116

\*Corresponding Author's email: [2025msag001@joyuniversity.edu.in](mailto:2025msag001@joyuniversity.edu.in)

Microgreens are young vegetable greens harvested shortly after germination, known for their intense flavors, vibrant colors, and exceptional nutritional value. In recent years, they have emerged as a promising functional food due to their high concentration of vitamins, minerals, and bioactive compounds. This paper explores the nutritional composition of microgreens, highlighting their richness in antioxidants such as polyphenols and carotenoids, which contribute to the prevention of chronic diseases. Additionally, the study discusses their health benefits, including improved cardiovascular health, enhanced digestion, and better blood sugar regulation. The ease of cultivation and minimal space requirements make microgreens highly accessible, particularly in urban environments where fresh produce may be limited. Their short growth cycle and sustainability further enhance their appeal as a modern dietary component. Overall, microgreens represent a convenient and nutrient-dense food source that can play a significant role in promoting health and well-being.

**Keywords:** Microgreens, Nutritional Value, Antioxidants, Functional Foods, Health Benefits, Urban Agriculture, Sustainable Food, Dietary Nutrition

### Introduction

The increasing demand for nutrient-dense and sustainable food sources has led to growing interest in microgreens. These are edible seedlings of vegetables and herbs harvested at an early stage, typically within 1–3 weeks of growth. Common varieties include broccoli, radish, mustard, pea shoots, and basil. Despite their small size, microgreens are recognized for their concentrated nutrients and appealing sensory qualities. Microgreens differ from sprouts and mature vegetables in both cultivation and consumption. Unlike sprouts, which are consumed entirely (including roots), microgreens are harvested above the soil line. Their short growth cycle and minimal resource requirements make them suitable for both commercial farming and household production.

### Difference between sprouts and microgreens

Sprouts are simply seeds that have germinated while microgreens undergo a different planting and growth process that allows them to grow fully developed stems and leaves, allowing them to possess a significantly rich nutritional composition than sprouts. Sprouts are harvested within 2-5 days whereas, microgreens are harvested between 7-21 days depending on the type of vegetable. Microgreens are much healthier, has more nutritional value and enhanced taste than sprouts as they are concentrated with enzymes, flavonoids and natural flavor. The potential for bacteria growth is much lower in micro greens than in comparison to sprouts. Microgreens require slightly less warm and humid conditions than sprouts do, and only the leaf and stem are consumed.

## How to grow microgreens at home

**Microgreen Seeds:** Microgreens cannot be grown from regular seeds; one should use microgreen seeds only. Planting Soil works the best and it should not contain any chemical or pesticide quantities, in order to grow microgreens organic and healthy. Pot/Tray A container to grow microgreens can be a seed or regular planting pot or a vessel with 4-5 inches deep. Light Source Microgreens require an essential amount of sunlight /natural light for at least 3-4 hours a day. A bright windowsill or a balcony that receives sunlight will be a good spot for the plant. Water is a necessary element for Microgreens. The soil being used is to be kept moist at all times. A hand sprinkler works best for the plant, due to its micro-outlets that do not let open a huge downpour of water.

**Steps in cultivation of fresh, flavorsome and healthy microgreens:** Filling the tray/container with soil. Since the roots of Microgreens do not reach that deep, 3-4 inches soil height should be good enough. Microgreen seeds are to be spread on the soil surface. The spacing between the seeds does not need to be completely even, so hand sprinkling works fine. cover with a very thin layer of soil and gently pat the surface in order to make the seeds settle well in the container. Damp the soil: Spray enough water over the soil surface in order to make the surface completely moist, but do not flood it with water. Place the container at room temperature keep the container for about two days until germination occurs. Then choose a sunny spot to place the plant, where it receives a good amount of sunlight for at least 3-4 hours in a day. sprinkle the water over the growing greens, twice a day. In 3-4 days', time, small leaves grow over the soil with little shoots at the bottom. Harvesting Microgreens Once the plants are 2-3 inches taller, they are ready to be harvested. Cut the microgreens with a pair of scissors or a sharp knife and cut the Microgreens, holding them vertically, from just over the roots. wash, the harvested microgreens with cold running water and use it in a meal. Microgreens provide the best of nutrition when consumed fresh, right after the harvest. Dry them after washing and store in a paper wrap in the refrigerator

## Nutritional Value

Microgreens are considered nutrient-dense foods due to their high levels of essential vitamins and phytochemicals. Studies have demonstrated that they can contain significantly higher concentrations of vitamins such as vitamin C, vitamin E, and vitamin K compared to mature plants. For example, red cabbage microgreens are particularly rich in vitamin C, while sunflower microgreens provide a good source of healthy fats and proteins. In addition to vitamins, microgreens are abundant in minerals such as potassium, iron, zinc, and magnesium. They also contain bioactive compounds like polyphenols and carotenoids, which are known for their antioxidant properties. These compounds play a crucial role in protecting the body against oxidative stress and cellular damage. The nutrient composition of microgreens varies depending on the plant species, growing conditions, and harvesting stage. However, their overall nutritional density makes them an efficient way to enhance dietary intake without increasing calorie consumption.



## Health Benefits

The consumption of microgreens offers multiple health benefits due to their rich nutrient profile. One of the primary advantages is their ability to support cardiovascular health. The antioxidants present in microgreens help reduce inflammation and lower levels of harmful cholesterol, thereby decreasing the risk of heart disease. Microgreens may also contribute to better blood sugar control. Certain compounds found in these greens can slow the digestion of carbohydrates, leading to improved glucose regulation. This makes them beneficial for

individuals managing diabetes or metabolic disorders. Additionally, the high levels of vitamins and antioxidants in microgreens support immune function and promote healthy skin. Their fiber content aids digestion and contributes to gut health. Because they are low in calories and high in nutrients, microgreens are also useful in weight management and healthy dieting. Emerging research suggests that regular consumption of microgreens may help reduce the risk of chronic diseases, including cancer, due to their anti-inflammatory and antioxidant properties.

### Microgreens vs mature greens

Aspect	Microgreens	Mature leafy greens
Growth duration	10–20 days, high-turnover cycle	Weeks to months per harvest
Nutrient density	4–40× higher in many micronutrients	Lower per gram
Growing environment	Well-suited to indoor and small-scale farms	Often field-based, larger area needed
Flavor and use	Intense, colorful, often used as garnish or salad	Milder, bulk-cooking and side dishes

### Cultivation and Accessibility

One of the most appealing aspects of microgreens is their ease of cultivation. They can be grown in small spaces using simple materials such as trays, soil, or hydroponic systems. Adequate light, water, and ventilation are sufficient for their growth, making them ideal for indoor farming. Microgreens have a short growth cycle, allowing for quick harvesting within a few weeks. This rapid production makes them a sustainable and efficient food source. They can be cultivated year-round, regardless of climate conditions, which enhances food security. In urban areas where access to fresh vegetables may be limited, microgreens provide a practical solution. Their ability to grow in controlled environments reduces dependence on traditional agriculture and long supply chains. As a result, they are increasingly being adopted in home gardening, restaurants, and commercial production systems.

### Conclusion

Microgreens are a valuable addition to modern diets due to their high nutritional content, health benefits, and ease of cultivation. Their rich supply of vitamins, minerals, and antioxidants makes them an effective way to improve overall

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